

CLAIMS:

1. A liquid crystal display apparatus capable of color-displaying provided with crystal panel having, in each main pixel unit, a red outputting subpixel, a green outputting subpixel, a blue outputting subpixel and a luminance-intensifying subpixel characterized by comprising:

5 data calculating means for obtaining a digital value for driving a luminance-intensifying subpixel by carrying out a predetermined calculation processing using digital values respectively for a red inputting pixel, a green inputting pixel, and a blue inputting pixel which are obtained from an input image,

10 wherein said liquid crystal displaying apparatus driving the luminance-intensifying subpixel, the red outputting subpixel, the green outputting subpixel and the blue outputting subpixel by using said digital value for driving said luminance-intensifying subpixel obtained by said data calculating means and said digital values of said red, green and blue inputting subpixels, characterized in that: said predetermined calculation processing by said data calculating means obtains said digital value for driving said luminance-intensifying subpixel by a function of $W=f(Y_{min}, Y_{max})$ where said digital value of said 15 luminance-intensifying pixel is defined as W , and a minimum value and a maximum value of said digital values of said red inputting subpixel, said green inputting subpixel and said blue inputting subpixel are respectively defined as Y_{min} and Y_{max} .

20 2. A liquid crystal display apparatus according to Claim 2, wherein said function of $W=f(Y_{min}, Y_{max})$ is directed to a function which is monotonously increased as said Y_{min} value or said Y_{max} value becomes larger.

25 3. A liquid crystal displaying apparatus according to Claim 1 characterized in that: said function of $W=f(Y_{min}, Y_{max})$ is directed to a function in which said Y_{min} is a variable value and said Y_{max} is a constant value and which is monotonously increased as said Y_{min} value becomes larger.

4. A liquid crystal display apparatus according to any of Claims 1 and 3 characterized in that: when α , β and n are predetermined real numbers and when a maximum value which digital values of said red inputting subpixel, said green inputting subpixel and said blue inputting subpixel can take is defined as MAX, said function of $w=f(Y_{\min}, Y_{\max})$ is represented by a function of $W=\text{Max}\{ (Y_{\text{miu}}+\alpha)+(MAX+\beta) \}^n$ by which a digital value for driving said luminance intensifying subpixel is obtained.

5. A liquid crystal displaying apparatus according to any one of Claims 1 to 4 characterized in that: when a digital value of any of said red inputting subpixel, said green inputting subpixel and said blue inputting subpixel is a zero value, a value of said W is zero.

6. A liquid crystal display apparatus according to any one of Claims 1 to 5 characterized in that: said apparatus comprises:
storing means for storing a plurality of kinds of functions each represented by said function of $W=f(Y_{\min}, Y_{\max})$; and
selecting means for selecting any of said plurality of kinds of functions represented by said function of $W=f(Y_{\min}, Y_{\max})$ stored by said storing means.

7. A liquid crystal display apparatus according to any one of claims 1 to 6, wherein said red outputting subpixel, said green outputting subpixel and said blue outputting subpixel are arranged to form a main pixel unit without using said subpixel for luminance in accordance with a predetermined control signal, thereby to enable the apparatus to be used as a liquid crystal display apparatus capable of color-displaying.

8. A liquid crystal display apparatus according to any one of claims 1 to 6, wherein it is made possible based on a predetermined control signal to perform an image display in which said red outputting subpixel, said green outputting subpixel and said blue outputting subpixel are arranged as a main pixel unit without using said subpixel for luminance, and at the same time an image display in which said red outputting subpixel, said green outputting subpixel and said blue outputting subpixel are arranged as a main pixel unit using said subpixel for luminance.